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# **The social and community opportunities profile (SCOPE) social inclusion measure: structural equivalence in community mental health residents in Hong Kong and the UK**

## **Abstract**

Promoting social inclusion among individuals with mental health problems has the potential to improve the health conditions and well-being of this marginalized group. A valid social inclusion measurement applicable to more than one country will facilitate future cross cultural studies. This paper reports the analysis of structural equivalence and item differentiation among two mentally unhealthy and one healthy sample in the UK and Hong Kong. Three non-probability sample surveys were conducted using the Social and Communities Opportunities Profile (SCOPE) and Chinese version of SCOPE (SCOPE-C). Altogether 168 mental health service users in Hong Kong and 43 in UK were recruited through NGO and 212 participants from general healthy population were recruited in UK. The results showed that self-rated “overall social inclusion” differed significantly among all of the samples, with the healthy population feeling more included than the groups with mental illness. Exploratory factor analysis found that the mentally unhealthy and the general population sub-samples in UK, as well as the mentally unhealthy sub-sample in Hong Kong shared much similarity in the factor structure.

## **Key words**

Health assessment; mental health policy; social inclusion; exploratory factor analysis; scale development

The social and community opportunities profile (SCOPE) social inclusion measure: structural equivalence and differential item functioning in community mental health residents in Hong Kong and the UK

## **Introduction**

Cross-cultural comparison tests the boundaries of knowledge and stretches methodological parameters; highlights important similarities and differences; and promotes institutional and intercultural exchange and understanding (Matsumoto and Van de Vijver 2011). The present paper looks at these matters in relation to the concept of social inclusion in the UK and Hong Kong. While we recognise that the concept is a contested one, for the purposes of the present paper we accept the World Bank definition. “Social Inclusion (SI) refers to promoting equal access to opportunities, enabling everyone to contribute to social and economic program and share in its rewards” (The World Bank 2013). Also underpinning our understanding (and much of the relevant empirical work reported below) is the social model of disability which the UN has suggested is applicable in an Asian context and which also applies to people with mental health disabilities (Nagata 2007).

Over the last ten years there has been increasing activity to improve the disability rights and well-being of the Chinese population, and this has taken place against a very gradual shift from collectivism to individualism (Steele and Lynch 2013; Luhrmann 2014). Fisher and Jing (2008) argue that despite strong statements on disability rights in Chinese legislation since 1990, the independent living policy falls short of the social inclusion goals expected from such a policy commitment. They conclude that minimum income support and the introduction of social services are slowly addressing the social inclusion of disabled people in China.

The World Bank has suggested that China's major health challenge for the future is the care and treatment of people with non-communicable chronic physical and mental diseases. In "*Toward a Healthy and Harmonious Life in China*", the World Bank urged China to step up efforts to tackle its rising tide of non-communicable diseases (NCDs), warning of not only the social but the economic consequences of inaction (Wang, Marquez and Langenbrunner 2011). NCDs are China's number one health threat, contributing to more than 80% of the country's 10.3 million annual deaths and nearly 70% of its total disease burden.

In Hong Kong, where social services are considered as one of the most well-developed when compared to other parts of China, the inclusion spirit has never been stronger. This is evident in the policy addresses of the Chief Executive and also in the creation of the *Community Investment and Inclusion Fund*, which in 2010/11 alone funded projects to the tune of more than 30 million HK dollars. Nevertheless, there is a lack of a valid measure to evaluate the objective of improved social inclusion in Hong Kong. Not only will develop a valid inclusion measure help to augment the evidence base about the inclusion of ethnic groups and disabled groups, but it may also be used to demonstrate the inclusion efficacy of service programmes. Such a development could have the great potential for programme evaluation at local (HK) level, and for to extended application to Mainland China and other Chinese communities where inclusion/ exclusion issues remain very challenging (Blaxland et al. 2015).

### **Cross cultural measurement issues**

Interest in cross-cultural measurement issues has grown rapidly since the turn of the century. Although psychologists have taken the lead on measurement issues social work researchers have recognised the importance of developing cross-cultural measurement for the profession, especially for work with minority and immigrant groups including marginalised Asian immigrants (Matsumoto and Van de Vijver, 2011; Tran 2009; Willgerodt et al. 2005). Both professions recognise the same bias and equivalence issues in cross-cultural measurement (Matsumoto and Van de Vijver 2011; Tran 2009)

There are many types of cross-cultural research. Herdman et al. (1998) listed 19 type, others have suggested that there are perhaps as many as 50 (Johnson et al. 2011). Most authors agree on five or six fundamental ones: these include conceptual, item, semantic, operational, metric or measurement unit, structural and functional equivalence (Berg et al. 2003; Herdman et al. 1998; Lee and Jung 2006; Mahler et al. 2009; Matsumoto and van de Vijver 2011; Streiner and Norman 2008; Tran 2009; Van Widenfelt 2005).

In essence, these look at whether the construct is conceptualised in the same way in different cultures; whether it consists of the same constituent elements; and whether its relation with other constructs is the same. Structure-oriented studies (such as reported here) focus mainly on the consistency of relationships among variables and between measures in more than one culture. Fischer and Fontaine (2011) distinguish four levels of equivalence: functional; structural; metric; and full score equivalence. They define structural equivalence as ‘the same underlying dimensions emerge and

item responses are not trivially related to these dimensions in each of the cultural groups’.

It has been suggested that, currently, there is a misguided pre-occupation with scales rather than the concepts being scaled and too much reliance on unsubstantiated claims of conceptual equivalence between them (Bowden and Fox-Rushby 2003) . The same issue arises in relation to the cross cultural adaptation of HRQOL instruments (Cheung and Thumboo 2006). The approach we take to the question of conceptual equivalence between cultures is universalist rather than absolutist (Herdman et al. 1998). This approach does not make the prior assumption that constructs will be the same across cultures and, consequently, implies a need to establish whether the concept exists and is interpreted similarly in the two settings.

### **The development of SCOPE-C**

In previous work we have reported on the conceptual equivalence of the concept in the UK and in Hong Kong (Anonymous 2013). A focus group study involving concept mapping was conducted in Hong Kong during September to October 2012. The objective of the study was to investigate how the concepts of social inclusion are understood by Hong Kong residents. Seven groups of 61 participants (38 females; 23 males) were interviewed, including non-professional workers at a service centre, senior centre users, a mixed group of parents as well as community residents, persons with severe mental illness, professional social service providers, communication studies students, and social work students. Six major themes were identified: (1) material resources and wealth, (2) work, (3) social (dis)harmony and diversity, (4) discrimination, (5) communication, and (6) participation in activities. Hong Kong

respondents gave more prominence to issues of stigma and discrimination, than UK respondents so further items were introduced into the SCOPE-C. Translation and back translation of the other SCOPE domains was undertaken as per the protocol. As a result, certain variables within domains were replaced by Hong Kong specific items and codes based upon the HK population census questions and coding (see Anonymous 2014a).

The SCOPE-C was then piloted tested for acceptability and clarity among a group of professionals and NGO patients. No further amendments were deemed necessary. The SCOPE-C was then applied to the sample of NGO patient at baseline and two weeks later to assess test retest reliability and then again after 6 months to assess change (see Anonymous 2014a). The main mental health sample in Hong Kong was made up of NGO patients meeting the selection/exclusion criteria (being well enough to be interviewed, having a formal psychiatric diagnosis and living in the community). A similar sample in the UK, meeting the same selection criteria was obtained from a community mental health organisation, equivalent to the NGOs in Hong Kong. In both samples the main diagnosis was psychosis, and individuals were still receiving psychiatric services while resident in the community. The mental health samples were collected contemporaneously in late 2013 and early 2014.

### **Present study aims**

The aim of the present paper is to report on the analysis of structural equivalence and item differentiation in two mentally unhealthy and one healthy samples.

Previous papers have reported on the development of the instrument and aspects of validity and reliability:

- The similarities and shared understanding of the model of social inclusion in focus group samples in the UK and Hong Kong (Anonymous 2013)
- The high reliability and validity of the SCOPE-C in the Hong Kong sample (Anonymous 2014a)
- The relationship between health and the experience of discrimination and inclusion in the Hong Kong sample (Anonymous 2014b)

## **Method**

### *Samples*

The main SCOPE-C mental health sample in Hong Kong was made up of NGO patients meeting the selection/exclusion criteria (being well enough to be interviewed, having a formal psychiatric diagnosis and living in the community under NGO supervision). A similar sample in the UK, meeting the same selection criteria was obtained from a community mental health organisation, equivalent to the NGOs in Hong Kong. In both samples the main diagnosis was psychosis, and individuals were still receiving psychiatric services while resident in the community. The main healthy population sample in the UK was collected from SCOPE interviews with individuals in a representative sample of households across the UK collected in 2011 (Anonymous 2011).

### *Analysis*

For an understanding of structural equivalence, exploratory factor analysis has been advocated and principal components analysis proposed as a data reduction technique. By using Procrustean rotation (Fischer and Fontaine 2011) the factor structure can be rotated towards the theoretically expected structure. It is an alternative to confirmatory factor analysis (CFA) in complex data sets.



Differential item functioning (item bias) (DIF) is used can be assessed using analysis of variance (Van de Vijver and Leung 2011) or logistic regression. These two statistical techniques were applied to the data.

## **Results**

### *Samples compared*

[Insert Table 1 about here]

While the age and gender items could represent sampling bias, the other variables could also be seen as representing cultural differences.

The following analysis compares the three samples in terms of their response to a single overall inclusion question: “Overall, how do you feel about the extent to which you are included in society?”. We have reported the analysis of variance result but the Kruskal Wallis test gave the same result.

Mean scores of the overall social inclusion were 5.31, 3.95, and 4.65 for UK general public, UK mental health services users and HK mental health service users respectively (one-way Anova,  $F=19.44$   $p<.001$ ). From this analysis we are able to say that overall SI differs significantly between all of the samples, in the way we would expect from previous research, with the healthy population feeling more included than the mental health services user groups.

### *Structural equivalence*

Exploratory factor analysis was conducted for each of the sub-sample using varimax rotation for factors with eigen values larger than one. Factor loadings great than 0.5 for each factor were listed. Table 2 summarizes the results of factor analysis for the two UK sub-sample while Table 3 summarizes the result of factor analysis for the

Hong Kong sub-sample. We examine the structural equivalence using factor analysis, the rotated factor patterns in each sample and the item loadings. Many of the variables included in Tables 2 and 3, are either of the form ‘how satisfied are you with your participation/ engagement in’ (e.g. opportunities to enhance your income) or perception of the range of opportunities available in the area (e.g. to find suitable work). Identical variables were entered into all three analyses.

[Insert Table 2 about here]

[Insert Table 3 about here]

Over 60% of the variance is explained in each analysis but in the UK mental health services user sub-sample it is over 90%.

Looking at the first two factors which explain between a third and half of the variance, the single variable which enters into all the analyses in the first factor is having friends to visit the home. Work and family contact are in the first factor in Hong Kong but are in separate factors in both UK samples. Safety of the area is in a single item factor in the UK healthy sample, but emerges in factor 2 in the mental health user groups, and in Hong Kong is associated with overall inclusion and satisfaction with contact with friends and family.

Work enters into all the analyses but is related to age in the UK population sample, and to family and friends in HK. Although only 9% of the UK mental health user sub-sample is in work, it emerges in two of the factors. There is a specific factor association between age and the length of residence in the area in both the UK samples but not in Hong Kong. As Table 1 indicates there are significant age differences between the sub-samples which may account for this finding.

### *Differential item functioning results*

Next we consider whether there are systematic variations in the responses to specific items, by sample. Using an ordinal regression analysis on overall social inclusion shows that the model fit in UK GP is 40% and 88% for UK mental health user sub-sample, but that the amount of variance explained in Hong Kong is the lowest for less than 20%.

[Insert Table 4 about here]

While there are item differences between the models, the perceived opportunities to participate in community groups appear important in all of the samples. Similarly, having friends to the home is important in all but is negative in the UK healthy population. The negative relation between overall inclusion mental and physical health is due to the direction of coding the health items, so better physical and mental health are related to better overall inclusion score. It is noteworthy that the health variables only contribute to the model in the healthy sample; the other groups are defined by their mental health status (and physical disability for many –see table 1), and presumably therefore have insignificant variance to fit the model.

The direction of the relationship between more opportunities for family contact and lower inclusion score in the healthy population also requires explanation. Work, but not education contributes to the Hong Kong model, but neither variable appears in the UK models. Leisure appears in both UK models, but not in the Hong Kong model.

### **Discussion**

The difference in sample sizes may be one cause of some of the differences in the results. The small size of the UK mental health sample is the main deficiency, so

comparisons with this sample need to be made with some caution. The other samples sizes are adequate.

The major sample differences in terms of socio-demographic characteristics have an important bearing on these results. Among these major differences are the proportion of people in work in the samples, the extent of car ownership and the type of residential accommodation, all of which influence the findings.

Although the model fit in the regression analyses were all significant, the relatively lower amount of variance explained in the Hong Kong sample is only one-fifth of the total variance. Given the extent of the structural similarity of the dimensions of social inclusion in the UK and Hong Kong, these findings imply that the SCOPE-C does not give sufficient weight (in the number of questions within domains perhaps) to the more valued aspects of inclusion in Hong Kong. On the basis of our earlier results, focus groups in Hong Kong did emphasize material differences, but also weighted heavily family support and interaction and close-knit communities.

On the subject of contact with family and friends, the perceived opportunities for contact with family are important in both Hong Kong and the general population sample in the UK, but less so in the UK SMI sample. This may be due to family relationship breakdown which is more common in the mentally unhealthy samples, and which contributes to a desire to avoid other family members. Avoidance is more difficult in Hong Kong where families are either supposed to take up the burden of care of the ill person, or are close by, or even live in the same small housing unit or apartment.

Having people visit their home is associated with better overall inclusion in the UK healthy sample. Both unhealthy samples have better overall inclusion when friends do not visit them at home. Although this seems to be a perverse finding, the in-depth case study material (as yet unpublished) and the concept mapping group data show several indications why this might be the case. First, patients in group home settings in Hong Kong and UK are encouraged to go out to socialise, rather than stay at home all day. In Hong Kong, and to a lesser extent in the UK, homes are often small and not especially welcoming. In addition, some of the housing locations are themselves a factor in that they are often in deprived neighbourhoods and tower blocks which the patient feel is stigmatising, and they would rather socialise away from home at work or in community groups.

There are no car owners in the HK sample, and this is a reflection the cost of purchasing a car in Hong Kong, and of the living arrangements in high rise apartment blocks and close proximity to family members, and the ease of transport around the city. In the UK however, car ownership is more necessary and has been used previously as a proxy indicator of material wealth and does have a bearing on inclusion, especially in rural areas. Another indicator of material well-being needs to be substituted for or added to car ownership for SCOPE-C, for example the size of the space available per family member might be a better indicator of material advantage in Hong Kong. Although we amended some of the SCOPE objective questions to make them consistent with the wording of the Hong Kong census, we may have to add more questions, or revise existing ones in order to explain more of the variance of overall inclusion. Another possibility is that the understanding of the ‘overall

inclusion' question is different in Hong Kong, and that had we asked about overall social harmony, we may have explained more of the variance.

## **Conclusion**

The lower amount of variance explained in the HK sample suggests that improvements can be made to capture more of the variance of overall inclusion. This will be the subject of further data gathering and qualitative analysis from detailed case studies and a feedback event for NGO managers and workers, plus a re-consideration of the concept mapping data. Evidently, an instrument developed to measure the particular circumstances of one disability group in one culture is more likely to explain a large amount of the variance of local responses. When re-located into another culture, even though the structure of domains of inclusion remains similar, the power to explain overall inclusion ratings seems to be diminishing.

China's future major health problem is going to be the management of chronic diseases (of which mental health is a major one) in community settings (World Health Organization 2008). A suitably modified SCOPE-C may be used by mental health services in HK and mainland China as they strive to promote a more inclusive society for their citizens, and particular disadvantaged groups.

4,400 words

**Table 1: Baseline socio-demographic variables of three sub-samples**

	UK mental health users (n= 43)	HK mental health users (n= 168)	UK general public (n= 212 )	Chi-square	p
Age: (%) Proportion under 50	48	59	41	12.71	<0.01
Gender: (%) Female	56	52	58	1.03	NS
Long-term limiting illness or disability: (%) Yes	92	49	33	50.16	<0.001
In any form of work (%) Yes	9	60	91	137.75	<0.001
Car ownership: (%) Yes	14	0	86	191.64	<0.001

**Table 2. Factor analysis for SCOPE among two UK sub-samples**

UK general public			UK mental health users		
	<i>Factor Loading</i>	<i>% Variance</i>		<i>Factor Loading</i>	<i>% Variance</i>
<b>Factor 1</b>		<b>22%</b>	<b>Factor 1</b>		<b>30%</b>
SatOpp for leisure	0.77		Overall social inclusion	0.93	
POpp for community groups	0.73		SatOpp for leisure	0.86	
Overall social inclusion	0.76		POpp for work	0.75	
Friends to home	0.62		POpp for community groups	0.63	
			Friends to home	0.52	
<b>Factor 2</b>		<b>13%</b>	<b>Factor 2</b>		<b>18%</b>
Age	0.77		SatOpp for Education	0.86	
POpp for work	0.62		Safety of the area	0.81	
Years in the area	0.54		POpp for Income	0.69	
			POpp for Housing	0.52	
<b>Factor 3</b>		<b>12%</b>	<b>Factor 3</b>		<b>15%</b>
POpp for family contact	0.78		SafOpp for income	0.93	
Car ownership	0.77		Car ownership	0.68	
<b>Factor 4</b>		<b>9%</b>	<b>Factor 4</b>		<b>13%</b>
POpp for Education	0.90		SatOpp for work	0.73	
			POpp for Income	0.93	
<b>Factor 5</b>		<b>9%</b>	<b>Factor 5</b>		<b>12%</b>
Safety of the area	0.83		SatOpp for family contact	0.91	
			<b>Factor 6</b>		<b>12%</b>
			Years in area	0.92	
			Age	0.68	
<b>Total variance explained</b>		<b>65%</b>	<b>Total variance explained</b>		<b>91%</b>

*Note.* Loadings greater than .5; varimax rotation



**Table 4: Factor analysis for SCOPE-C for sub-sample in Hong Kong**

	<i>Factor Loading</i>	<i>% Variance</i>
<b>Factor 1</b>		<b>22%</b>
SatOpp for Friends to home	0.80	
SatOpp for Work	0.79	
SatOpp for Family contact	0.65	
<b>Factor 2</b>		<b>13%</b>
Safety of the area	0.82	
Overall social inclusion	0.72	
SatOpp for Friend contact	0.53	
<b>Factor 3</b>		<b>10%</b>
SatOpp for education	0.75	
POpp for education	0.70	
<b>Factor 4</b>		<b>8%</b>
SatOpp for community groups	0.87	
POpp for community groups	0.71	
<b>Factor 5</b>		<b>8%</b>
POpp for Income	0.85	
<b>Factor 6</b>		<b>7%</b>
SatOpp for leisure	0.68	
Housing	0.66	
<b>Total variance explained</b>		<b>68%</b>

*Note. Loadings greater than .5; varimax rotation*



Table 4: Ordinal regression analysis: model fit and variance explained			
	UK general public N=212	UK mental health users N=43	Hong Kong mental health users N=168
Chi-squared (df) p	80.94 (7) p<0.001	38.4 (7) p=0.001	20.06 (7) p=0.001
Nagelkerke pseudo R <sup>2</sup>	.392	.879	.190

Table 5: Ordinal regression analysis models on overall social inclusion: estimates (95%CI) Wald statistic and p (ordered by Wald p)

<b>General population predictors (n=250)</b>	Estimate (95%CI)	Wald (p)	<b>UK SMI predictors (n=43)</b>	Estimate (95%CI)*	Wald (p)	<b>Hong Kong SMI predictors (n=160)</b>	Estimate (95%CI)
SO leisure	.704 (.383-1.02)	19.62 (0.000)	SO leisure	4.31 (1.84, 6.78)	11.71 (0.001)	PO community groups	.526 (.101, .951)
PO community groups	.432 (.174 - .690)	10.78 (0.001)	PO community groups	1.03 (.032-2.09)	3.61 (0.05)	Friends to home	-.260 (-.492, -.028)
Friends to home	.382 (.072, .692)	5.85 (0.05)	Friends to home	-.160 (-2.90, -.283)	5.70 (0.05)	PO family contact	.270 (.049, .500)
PO family contact	.209 (.387, .036)	5.25 (0.05)				SO Employment	.188 (.345, .031)
Physical health	-.104 (-.187, -.021)	5.98 (0.05)					
Mental health	-.131 (-.234, -.028)	6.25 (0.05)					

\* Large confidence intervals reflect small sample size

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